



Rebuild Rittenhouse Taps 86E & 95B System Hardening Project

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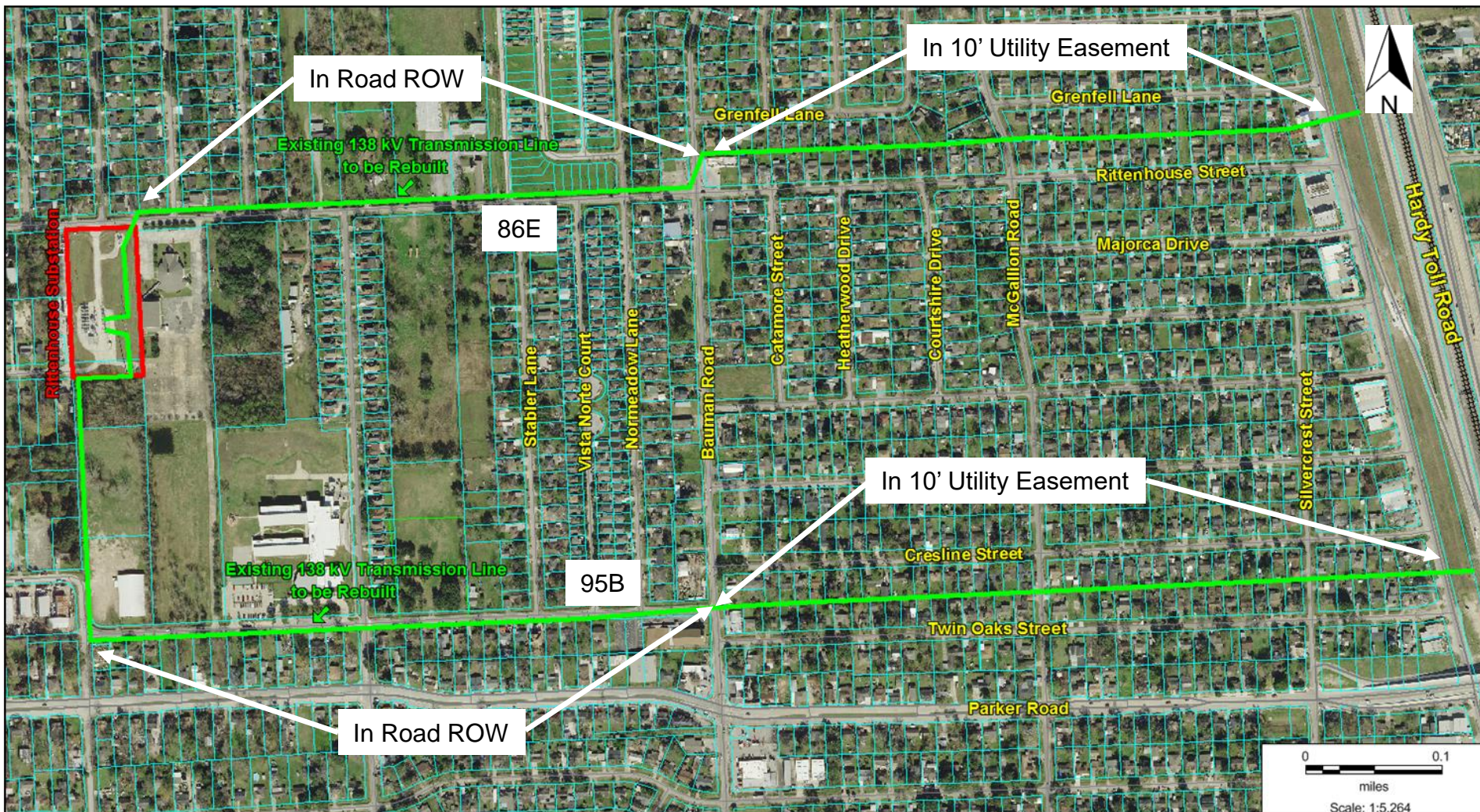
- **System Hardening Program.** (Formalized after Hurricane Ike)
 - Includes an effort to replace all wooden transmission structures with more resilient structures.
 - About 2,500 wooden transmission poles and 2,000 wooden H-frame transmission structures on the system.
 - Jan 2009 – Dec 2018, Replaced 2,400+ Wood Locations w/Steel or Concrete
- **NESC Transmission Line Clearance Program**
 - LIDAR technology utilized to measure physical clearances.
 - ≈ 20% of transmission system analyzed annually.
 - Analysis currently based on the 2017 NESC. (3 year update cycle)
- **Transmission Inspection Program**
 - 20% of the transmission system visually inspected annually.

- CNP's Transmission Resiliency efforts identified the need to rebuild the Rittenhouse Taps (86E & 95B between Rittenhouse Substation and Hardy Toll Road).
- Rittenhouse Taps were initially constructed in 1973.
 - Current NESC wind loading requirement = 110 MPH.
 - Latest version of the NESC is 2017.
 - "New" Wood Replacement Poles = 100 MPH
- In conjunction with the transmission rebuild, the wooden distribution poles and other identified facilities located in the 10' utility easement between Baumann Road and Hardy Toll Road will be upgraded/replaced as necessary.

General Project Area Overview



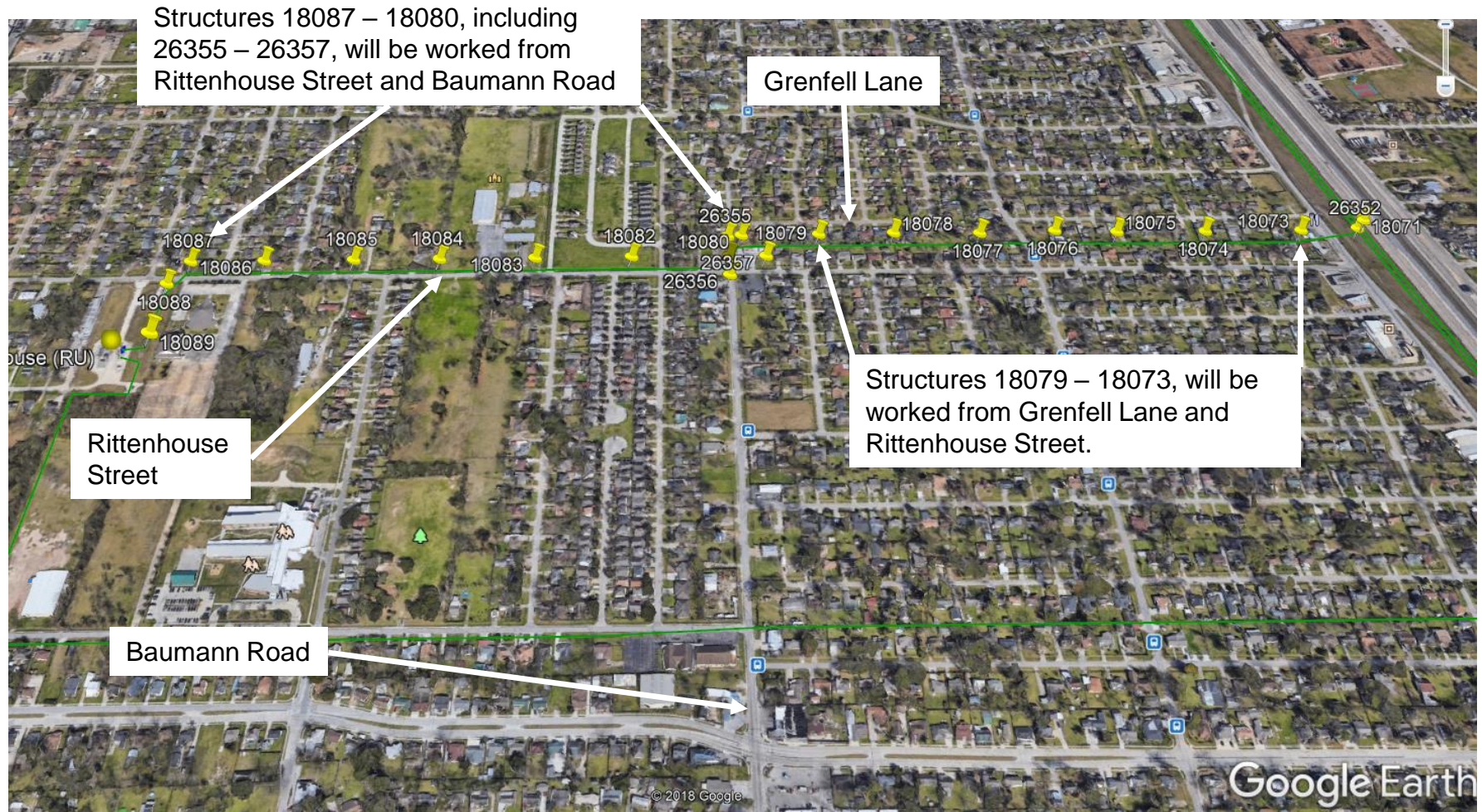
General Project Area Overview



Wood Poles vs Steel Poles



Rittenhouse Tap (Ckt 86E)



Structure 18079 – Plan View Between 618 & 622 Grenfell Lane



Structure 18079 – Street View Between 618 & 622 Grenfell Lane



Structure 18078 – Plan View Between 638 & 642 Grenfell Lane



Structure 18078 – Street View Between 638 & 642 Grenfell Lane



Structure 18077 – Plan View Between 617 & 619 Rittenhouse Street



Structure 18077 – Street View Between 617 & 619 Rittenhouse Street



Structure 18076 – Plan View

704 Grenfell Lane



Structure 18076 – Street View

704 Grenfell Lane



704

MAT AREA

Structure 18075 – Plan View Between 802 & 806 Grenfell Lane



Structure 18075 – Street View Between 802 & 806 Grenfell Lane



Structure 18074 – Plan View Between 902 & 910 Grenfell Lane



Structure 18074 – Street View Between 902 & 910 Grenfell Lane



Structure 18073 – Plan View

11207 W. Hardy Rd.



Structure 18073 – Plan View

11207 W. Hardy Rd.



86E

- Mail Notification Letters to Property Owners
- ≈ 1 Week Later - CNP ROW Agents will begin to Acquire Temporary Construction Easements, etc.
- ≈ 1 Weeks Later - CNP Construction Start
 - Construction will start on facilities in the Road ROW (west of Baumann Rd)
 - Target Completion in Q1 2020.
 - CNP will restore removed or damaged facilities as applicable (i.e. fences, etc.)
 - CNP Claims Representatives will be available as needed.
 - Transmission facilities will be de-energized during construction.
 - Distribution facilities will remain energized during construction.
 - Short duration outages may be necessary.

95B

- Will follow the same process as 86E.
- Target Construction start Q1 2020 & Complete Q2 2020.